

# NEW ESG HOTNESS

# ES6 = ECMASCRIPT 6

ECMAScript 6 is the 6th edition of ECMA-262, the standard defining the behaviors of the JavaScript language.

JavaScript is an implementation of ECMAScript, as are JScript and ActionScript.

**“ECMASCRIPT WAS  
ALWAYS AN  
UNWANTED TRADE  
NAME THAT SOUNDS  
LIKE A SKIN DISEASE.”**

Brendan Eich

# ECMA = EUROPEAN COMPUTER MANUFACTURERS ASSOCIATION<sup>1</sup>

They are a standards organization, like ISO.

<sup>1</sup> (but that doesn't matter)

# ECMAScript EDITIONS

- » 1 - June 1997
- » 2 - June 1998
- » 3 - December 1999
- » 4 - Oops...
- » 5 - December 2009
- » 6 - Mid-2015
- » 7 - TBA

# EXCITING NEW FEATURES

# FAT ARROWS

```
var cat = name => console.log("my cat is named " + name);  
cat('spot');
```

same as

```
var cat = function (name) {  
    return console.log("my cat is named " + name);  
};  
cat("spot");
```

# MORE ON FAT ARROWS

```
var numbers = [ 5, 4, 3, 2, 1];
```

```
var song = numbers.map( n => n + " bottles of beer on the wall" );
```

```
console.log( song );
```

```
/*  
[ '5 bottles of beer on the wall',  
  '4 bottles of beer on the wall',  
  '3 bottles of beer on the wall',  
  '2 bottles of beer on the wall',  
  '1 bottles of beer on the wall' ]  
*/
```



# CLASSES

```
class FarmAnimal {  
    constructor() {  
        this.legs = 4  
    }  
}
```

```
class Cow extends FarmAnimal {  
    speak() {  
        console.log("moo. I have " + this.legs + " legs.")  
    }  
}
```

```
var c = new Cow();  
c.speak(); // moo. I have 4 legs.
```

# FANCY STRING INTERPOLATION

```
var legs = 7; // mutant cow  
console.log(`I have ${legs} legs.`); // I have 7 legs
```

Note the back-ticks ( ` ) which are not the same as ( ' ) or ( " ).

# ENHANCED OBJECTS {}

```
var a = 'apple';
```

```
var b = 'banana';
```

```
var fruit = { a, b, c: 'cherry' };
```

```
console.log( fruit ); // { a: 'apple', b: 'banana', c: 'cherry' }
```

# DEFAULT PARAMS

```
function speak(phrase="Um") {  
  console.log(phrase);  
}
```

is nicer than the es5 equivalent

```
function speak(phrase) {  
  phrase = phrase || "Um";  
  console.log(phrase);  
}
```

```
speak(); // Um
```

# DESTRUCTURING

```
var a = "a";
```

```
var b = "b";
```

```
[a, b] = [b, a];
```

```
console.log(a); // b
```

# SPREAD OPERATOR + FOR..OF LOOPS

```
function makeWords(word, ...suffixes) {  
  for (var suffix of suffixes) {  
    console.log( word + suffix );  
  }  
}
```

```
makeWords( 'bake', 'ry', 'r', 'd' );  
/*  
bakery  
baker  
baked  
*/
```

# LET AND VARIABLE SCOPE

flagpole scope

```
{  
  var cat = 'meow';  
}  
console.log(cat); // meow
```

block scope

```
{  
  let dog = 'woof';  
}  
console.log(dog); // ReferenceError: dog is not defined
```

# MODULES

## lib/egyptianMath.js

```
export var pi = 22/7;  
export function cubitsToFeet(cb) {  
  return cb * 1.5;  
}
```

## someFile.js

```
import {pi} from 'lib/egyptianMath'  
console.log(pi);
```

## otherFile.js

```
import * as eMath from 'lib/egyptianMath'  
console.log(eMath.pi);
```



# SETS

```
var s = new Set();
```

```
s.add("OMG")
```

```
s.add("!")
```

```
s.add("ZOMG")
```

```
s.add("!")
```

```
s.add("!")
```

```
s.add("!")
```

```
console.log(s.size); // 3
```

# WEAKMAP / WEAKSET

```
var map = new WeakMap();
var dom = {
  someNode: { 'cats': 'happy' }
};

map.set(dom.someNode, "Meow");

var value = map.get(dom.someNode);
console.log(value); // "Meow"

dom['someNode'] = { 'cats': 'sad' };

// Having no strong references, { 'cats': 'happy' }
// can now be garbage collected.
```

# PROXIES<sup>2</sup>

```
var pets = [ 'cat', 'dog', 'fish', 'elephant' ];
```

```
console.log( pets[-1] ); // undefined
```

```
var superPets = new Proxy(pets, {  
  get: function(object, index) {  
    if (Number(index) < 0) {  
      return object[ object.length + Number(index) ];  
    } else {  
      return object[ index ];  
    }  
  }  
});
```

```
console.log( superPets[-1] ); // "elephant"
```

<sup>2</sup> Not supported by transpilers

# GENERATORS

```
function *fibonacci() {  
    var a=1, b=1;  
    while (true) {  
        [a,b] = [b,a+b];  
        yield b;  
    }  
}
```

```
var fib = fibonacci();
```

```
console.log( fib.next() ); // { value: 2, done: false }  
console.log( fib.next() ); // { value: 3, done: false }  
console.log( fib.next() ); // { value: 5, done: false }  
console.log( fib.next() ); // { value: 8, done: false }  
console.log( fib.next() ); // { value: 13, done: false }
```

# PROMISES

```
var promise = new Promise(function(resolve,reject) {  
  setTimeout(function() {  
    if ( Math.random() > 0.5 ) {  
      resolve('alive');  
    } else {  
      reject('dead');  
    }  
  }, 500);  
});
```

```
promise.then(  
  function(value) {  
    console.log('Yay, the cat is ' + value);  
  },  
  function(error) {  
    console.log('Sorry, the cat is ' + error);  
  }  
);
```

# HOW DO I USE THIS STUFF?

ECMAScript

5

6

7

non-standard

compatibility table

Flattr

8

by kangax

Gratipay

& webbedspace

Fork

77

Please note that *some of these tests* represent **existence**, not functionality or full conformance.

Sort by number of features?

Show obsolete browsers?

V8

SpiderMonkey

JavaScriptCore

Chakra

Carakan

KJS

Other

Useful feature

Significant feature

Landmark feature

|  |                 | Compilers/polyfills |  |                 |         |                    |             |          | Desktop browsers |       |                                     |           |       |       |       |                             |                             |                             |  |
|--|-----------------|---------------------|--|-----------------|---------|--------------------|-------------|----------|------------------|-------|-------------------------------------|-----------|-------|-------|-------|-----------------------------|-----------------------------|-----------------------------|--|
|  | 30%             | 65%                 | 77%                                    | 31%             | 35%     | 13%                | 9%          | 20%      | 3%               | 15%   | 70%                                 | 40%       | 57%   | 63%   | 65%   | 30%                         | 43%                         | 44%                         |  |
| Feature name   | Current browser | Traceur             | babel + core-js ex-6to5 <sup>[1]</sup> | ES6 Trans-piler | Closure | JSX <sup>[2]</sup> | Type-Script | es6-shim | IE 10            | IE 11 | IE Technical Preview <sup>[3]</sup> | FF 31 ESR | FF 35 | FF 36 | FF 37 | CH 40, OP 27 <sup>[4]</sup> | CH 41, OP 28 <sup>[4]</sup> | CH 42, OP 29 <sup>[4]</sup> |  |
| Optimisation   |                 |                     |  |                 |         |                    |             |          |                  |       |                                     |           |       |       |       |                             |                             |                             |  |
| <div>proper tail calls (tail call optimisation)</div>      | 0/2             | 0/2                 | 1/2                                    | 0/2             | 0/2     | 0/2                | 0/2         | 0/2      | 0/2              | 0/2   | 0/2                                 | 0/2       | 0/2   | 0/2   | 0/2   | 0/2                         | 0/2                         | 0/2                         |  |
| Syntax   |                 |                     |  |                 |         |                    |             |          |                  |       |                                     |           |       |       |       |                             |                             |                             |  |
| <div>default function parameters</div>                     | 0/5             | 3/5                 | 5/5                                    | 3/5             | 4/5     | 0/5                | 3/5         | 0/5      | 0/5              | 0/5   | 0/5                                 | 3/5       | 3/5   | 3/5   | 3/5   | 0/5                         | 0/5                         | 0/5                         |  |
| <div>rest parameters</div>                                 | 0/3             | 3/3                 | 3/3                                    | 2/3             | 1/3     | 2/3                | 2/3         | 0/3      | 0/3              | 0/3   | 2/3                                 | 2/3       | 2/3   | 2/3   | 2/3   | 0/3                         | 0/3                         | 0/3                         |  |
| <div>spread (...) operator</div>                           | 0/10            | 10/10               | 10/10                                  | 6/10            | 2/10    | 0/10               | 0/10        | 0/10     | 0/10             | 0/10  | 4/10                                | 8/10      | 8/10  | 10/10 | 10/10 | 0/10                        | 0/10                        | 0/10                        |  |
| <div>object literal extensions</div>                       | 0/5             | 5/5                 | 5/5                                    | 5/5             | 4/5     | 2/5                | 2/5         | 0/5      | 0/5              | 0/5   | 5/5                                 | 0/5       | 5/5   | 5/5   | 5/5   | 0/5                         | 0/5                         | 0/5                         |  |
| <div>for..of loops</div>                                   | 5/5             | 5/5                 | 5/5                                    | 3/5             | 4/5     | 0/5                | 0/5         | 0/5      | 0/5              | 0/5   | 5/5                                 | 4/5       | 4/5   | 5/5   | 5/5   | 5/5                         | 5/5                         | 5/5                         |  |
| <div>octal and binary literals</div>                       | 0/4             | 2/4                 | 2/4                                    | 2/4             | 2/4     | 0/4                | 2/4         | 0/4      | 0/4              | 0/4   | 2/4                                 | 2/4       | 2/4   | 4/4   | 4/4   | 0/4                         | 4/4                         | 4/4                         |  |
| <div>template strings</div>                                | 0/2             | 2/2                 | 2/2                                    | 2/2             | 2/2     | 2/2                | 1/2         | 0/2      | 0/2              | 0/2   | 1/2                                 | 0/2       | 2/2   | 2/2   | 2/2   | 0/2                         | 2/2                         | 2/2                         |  |
| <div>RegExp "y" and "u" flags</div>                        | 0/2             | 1/2                 | 1/2                                    | 0/2             | 0/2     | 0/2                | 0/2         | 0/2      | 0/2              | 0/2   | 1/2                                 | 1/2       | 1/2   | 1/2   | 1/2   | 0/2                         | 0/2                         | 0/2                         |  |
| <div>destructuring</div>                                   | 0/24            | 22/24               | 23/24                                  | 17/24           | 14/24   | 9/24               | 0/24        | 0/24     | 0/24             | 0/24  | 0/24                                | 14/24     | 18/24 | 19/24 | 19/24 | 0/24                        | 0/24                        | 0/24                        |  |
| <div>Unicode code point escapes</div>                      | No              | Yes                 | Yes                                    | Yes             | Yes     | No                 | No          | No       | No               | No    | Yes                                 | No        | No    | No    | No    | No                          | No                          | No                          |  |
| Bindings   |                 |                     |  |                 |         |                    |             |          |                  |       |                                     |           |       |       |       |                             |                             |                             |  |
| <div>const</div>   | 1/8             | 6/8                 | 6/8                                    | 6/8             | 6/8     | 1/8                | 0/8         | 0/8      | 0/8              | 8/8   | 8/8                                 | 3/8       | 3/8   | 8/8   | 8/8   | 1/8                         | 5/8                         | 5/8                         |  |
| <div>let</div>   | 0/10            | 8/10                | 8/10                                   | 6/10            | 8/10    | 0/10               | 0/10        | 0/10     | 0/10             | 8/10  | 8/10                                | 0/10      | 0/10  | 0/10  | 0/10  | 0/10                        | 5/10                        | 5/10                        |  |
| <div>block-level function declaration<sup>[11]</sup></div> | No              | Yes                 | Yes                                    | No              | Yes     | No                 | No          | No       | No               | Yes   | Yes                                 | No        | No    | No    | No    | Flag                        | Yes                         | Yes                         |  |
| Functions  |                 |                     |  |                 |         |                    |             |          |                  |       |                                     |           |       |       |       |                             |                             |                             |  |
| <div>arrow functions</div>                                 | 0/11            | 9/11                | 9/11                                   | 7/11            | 8/11    | 7/11               | 6/11        | 0/11     | 0/11             | 0/11  | 10/11                               | 7/11      | 7/11  | 7/11  | 7/11  | 0/11                        | 0/11                        | 0/11                        |  |

HTTP://KANGAX.GITHUB.IO/COMPAT-TABLE/ES6/

PAWEL SZYMCZYKOWSKI / @MAKENAI

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# IE TECHNICAL PREVIEW 70% SUPPORTED<sup>3</sup>

<sup>3</sup> Have to enable experimental web features.



**FIREFOX 37**  
**65% SUPPORTED**

# 10.JS

## 42% SUPPORTED<sup>4</sup>

<sup>4</sup> With `--es_staging` flag

# BABEL

# 77% SUPPORT

# BABEL

Compiles ES6 code into ES3 code that your JS engine can run today.

```
$ cat interpolation.js
```

```
var legs = 7;  
console.log(`I have ${legs} legs.`);
```

```
$ babel interpolation.js
```

```
"use strict";  
  
var legs = 7;  
console.log("I have " + legs + " legs.");
```

# USING BABEL

```
npm install --g babel
```

enables

```
babel someFile.js # Outputs the generated ES3 code
```

```
babel-node someFile.js # Just like the node REPL
```

# GRUNT

```
require("load-grunt-tasks")(grunt); // npm install --save-dev load-grunt-tasks
```

```
grunt.initConfig({  
  "babel": {  
    options: {  
      sourceMap: true  
    },  
    dist: {  
      files: {  
        "dist/app.js": "src/app.js"  
      }  
    }  
  }  
});
```

# BABEL AS A LIBRARY

## main.js

```
require('babel/register');  
var myApp = require('app');  
  
// No ES6 code allowed in this file yet  
myApp.run();
```

## app.js

```
// ES6 code OK in this file and any else that it includes  
module.exports = {  
  run: function() {  
    var numbers = [ 5, 4, 3, 2, 1];  
    var song = numbers.map( n => n + " bottles of beer on the wall" );  
    console.log( song );  
  }  
}
```

# IN THE BROWSER

Probably not a great idea, but you could you know...

```
<script src="node_modules/babel/browser.js"></script>
<script type="text/babel">
class Test {
  test() {
    return "test";
  }
}

var test = new Test;
test.test(); // "test"
</script>
```



# ...AND A BUNCH OF OTHER PLACES.

» rails

» broccoli

» browserify

» brunch

» duo

» gobble

» gulp

# RESOURCES

ECMAScript 6 compatibility table

<http://kangax.github.io/compat-table/es6/>

ECMAScript 2015 Language Specification

<https://people.mozilla.org/~jorendorff/es6-draft.html>

Overview of ECMAScript 6 features

<https://github.com/lukehoban/es6features>

# QUESTIONS?